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CONSTRUCTION OF WRF/CAM TWO-WAY COUPLING SYSTEM AND PRELIMINARY RESULTS

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ABSTRACT

A WRF/CAM two-way inline coupling system within CCSM4 framework has been constructed. The WRF model is incorporated into CCSM as a regional atmosphere component and communicates with other CCSM components via cpl7. The CAM along with other CCSM4's components provides atmospheric and surface/soil conditions to initialize the WRF, renew boundary conditions and constraint selected large scale properties. The WRF exports heat and moisture fluxes at fine scale to the CAM to enhance subgrid representation and realize upscaling influences. The essential WRF Processing System (WPS) functions are integrated in WRF component, with critical modifications to improve the accuracy and conservation, and maintain the stability for long term integration. WRF's internal nesting capability is retained in order to resolve multiple scale phenomena. A series of test are designed to verify the integrity of the one-way and two-way coupling of the system, and demonstrate the usefulness of the system in resolving important cloud and weather scale processes in the context of global climate model.